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[54] **HARD MASKING METHOD FOR FORMING
PATTERNED OXYGEN CONTAINING
PLASMA ETCHABLE LAYER**

5,858,623 1/1999 Yu et al. 430/315

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216/75; 216/76; 216/79**

[58] Field of Search **216/2, 67, 74,
216/75, 76**

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[57] **ABSTRACT**

A method for forming a patterned microelectronics layer within a microelectronics fabrication. There is first provided a substrate employed within a microelectronics fabrication. There is then formed over the substrate an oxygen containing plasma etchable microelectronics layer. There is then formed upon the oxygen containing plasma etchable microelectronics layer a hard mask layer. There is then formed upon the hard mask layer a patterned photoresist layer. There is then etched through use of a first anisotropic plasma etch method the hard mask layer to form a patterned hard mask layer while employing the patterned photoresist layer as a first etch mask layer. The first anisotropic plasma etch method employs an etchant gas composition appropriate for etching a hard mask material from which is formed the hard mask layer. There is then etched through use of a second plasma etch method the patterned photoresist layer from the patterned hard mask layer while employing the patterned hard mask layer as an etch stop layer while simultaneously etching the oxygen containing plasma etchable microelectronics layer while employing at least the patterned hard mask layer as a second etch mask layer to form a patterned oxygen containing plasma etchable microelectronics layer. The second plasma etch method employs an oxygen containing etchant gas composition. The method is particularly useful for forming patterned oxygen containing plasma etchable microelectronics dielectric layers within microelectronics fabrications.

16 Claims, 2 Drawing Sheets

